



METEOROLOGICAL OFFICE

**NEWSLETTER
FOR
CLIMATOLOGICAL
OBSERVERS
IN ENGLAND AND WALES**

MAR 1991

THE METEOROLOGICAL OFFICE

NEWSLETTER

FOR

CLIMATOLOGICAL OBSERVERS

NO 20

MARCH 1991

Produced by:

Meteorological Office
Observation Provision Branch
Climatological Station Management
Eastern Road
Bracknell
Berkshire
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OBSERVERS NEWSLETTER - 20th Edition

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EDITORIAL

Welcome to the 20th edition (and my first) of the Newsletter, I hope you will enjoy it and, better still, want to write something for the next one. Many thanks to all those who wrote to me this year, I hope I didn't mangle too many of your letters!

Following the promotion and relocation of Dick Brooks in May, Phil Doherty took over the post for a short time before returning to N. Ireland on promotion. I took up the post in September 1990 and hope to continue working here for some time.

I joined the office in 1971 and have served at London Weather Centre, Lerwick (in the Shetland Isles), Central Forecast Office (at Bracknell), RAF Benson and a few months in the Quality Control Section. These posts have entailed, among other things, dealing with public enquiries, hand plotting weather charts (that shows my age!), upper-air work (ie filling and launching radio-sonde balloons) and, of course, observing.

Many, if not all, of you will have noticed a lack of annual supplies this year. We give our heartfelt apologies for this. It seems that the whole of the system for issuing forms is being run by newly appointed people, including ourselves. Just to make matters more interesting, the computer disc with the issue names and addresses was accidentally wiped clean. The delay was caused by the time taken to re-enter the information. Having checked what was (at last) distributed my hair contains much more grey! A, hopefully, correct issue should be forthcoming though I don't know when. Soon I hope to have my own computer disc containing this information. I can then see to amendments etc myself (I promise to make a back-up disc) and so cut out the middle men. Once again we apologise for the chaos.

Talking of computers, in the near future I will be putting information on computer about you and your station. If you find the time I would be grateful if you would fill in the questionnaire on the back page.

You will find an interesting article from the station at Weston Park, Sheffield in this edition. If any of you want to tell us about the history of your Met. station, please write in and I will put the article in another edition of the Newsletter.

From Gerry Southern, at Presteigne, I've received a very descriptive article on his most interesting day's weather. Read and enjoy!

Can you help with on the spot observations? Once again we ask your help in keeping the weather forecasts up to date. Please read the article on page 13 and see if you feel you can help us.

Thank you to everyone who contributed to this edition. All articles for the NEXT edition (in by December please) will be gratefully received!

MISS SHIRLEY CHARGE

CONTACT POINTS WITHIN OBSERVATION PROVISION BRANCH

SURFACE NETWORKS GROUP

Section: Climatological Station Management

Function: Liaison with observers.
Queries on running a meteorological station.
Supplies of stationery, forms, equipment, sunshine cards and pocket registers.
Site visits and changes.

Staff: George Spence Ext. 5906
Shirley Charge Ext. 5907

Address: Meteorological Office
Observation Provision Branch (1a)
Room T11
Eastern Road
Bracknell
Berks.
RG12 2UR

Telephone: Bracknell - 0344 85 plus the extension number.

COMPUTER DATA ARCHIVING GROUP

Section: Quality Control.

Function: Collection and quality control of climatological data.

Staff: Jack Taylor Ext. 6819
David Jones Ext. 6634
Walter Shackleton Ext. 6822
John Spafford Ext. 6823
Jan Lewandowski Ext. 6824

Address: Meteorological Office
Observation Provision Branch (3a)
Room 139
London Road
Bracknell
Berks.
RG12 2SZ

Telephone: Bracknell - 0344 85 plus extension number.

NEWS OF STATIONS

Stations Closed

1. BUTSER - HILLHAMPTON (Hants.) - Ancient Farm Project closed end of September 1990.
2. CONSTANTINE BAY (Cornwall) - The observer no longer wishes to continue with his commitment to the network. Closed January 1991.
3. MARKEATON PARK (Derbyshire) - Loss of present site and staff changes mean that observations cannot be continued. Closed January 1991.
4. MANSFIELD (Notts.) - A District Council run station. The observer has left and a replacement could not be found. Closed November 1990.
5. HARTBURN GRANGE (Cleveland) - Run by Tioxide Group Plc who ceased operations January 1991.
6. STONE (Staffs.) - Staff shortages and uncertainty about the future have caused the station run by AFRC to close in January.
7. ENFIELD (Middx.) - Vandalism and site problems have brought about the closure of this station in January 1991.

NEW STATIONS

During March 1990

1. LOWER KINGCOMBE (Dorset) - This station was set up at the Kingcombe Centre which runs field study courses.

During June 1990

2. STOUGHTON (Leics) - A station has been opened at the Stoughton Farm Park which is a CWS farm and is open to the public.
3. BOURNE (Lincs) - A farm site run by Mr R J Watts.
4. CASTERTON (Lincs) - A farm site run by Mr & Mrs Benson.
5. RISHWORTH (Yorks) - This station is run by the Science Department at Rishworth School.

During August 1990

6. BRADELEY GREEN (Shropshire) - A private station run by Mr M Latham.
7. EYNSFORD (Kent) - A farm site run by Mr J R Alexander.

During October 1990

8. WITHLEIGH (Devon) - Established at Withleigh Nurseries and run by Mr C S Britton.

During December 1990

9. RHIWFAWR (W. Glamorgan) - A private farm, observer Mrs M Birch.

10. CYMMER (W. Glamorgan) - A private farm, observer Mr R M Howells.

11. SEATOLLER (Cumbria) - National Parks, run by Mr M Greatbatch.

During January 1991

12. TRELISSICK (Cornwall) - National Trust, observer Mr Champion.

During February 1991

13. TONDU (Mid. Glamorgan) - Glamorgan Wildlife Trust, observer Mr N J Ajax Lewis.

14. CLYST HONITON (Devon) - Private farm, observers Mr & Mrs Ralph.

15. RAINHILL (Merseyside) - Private farm, observer Mr B Rothwell.

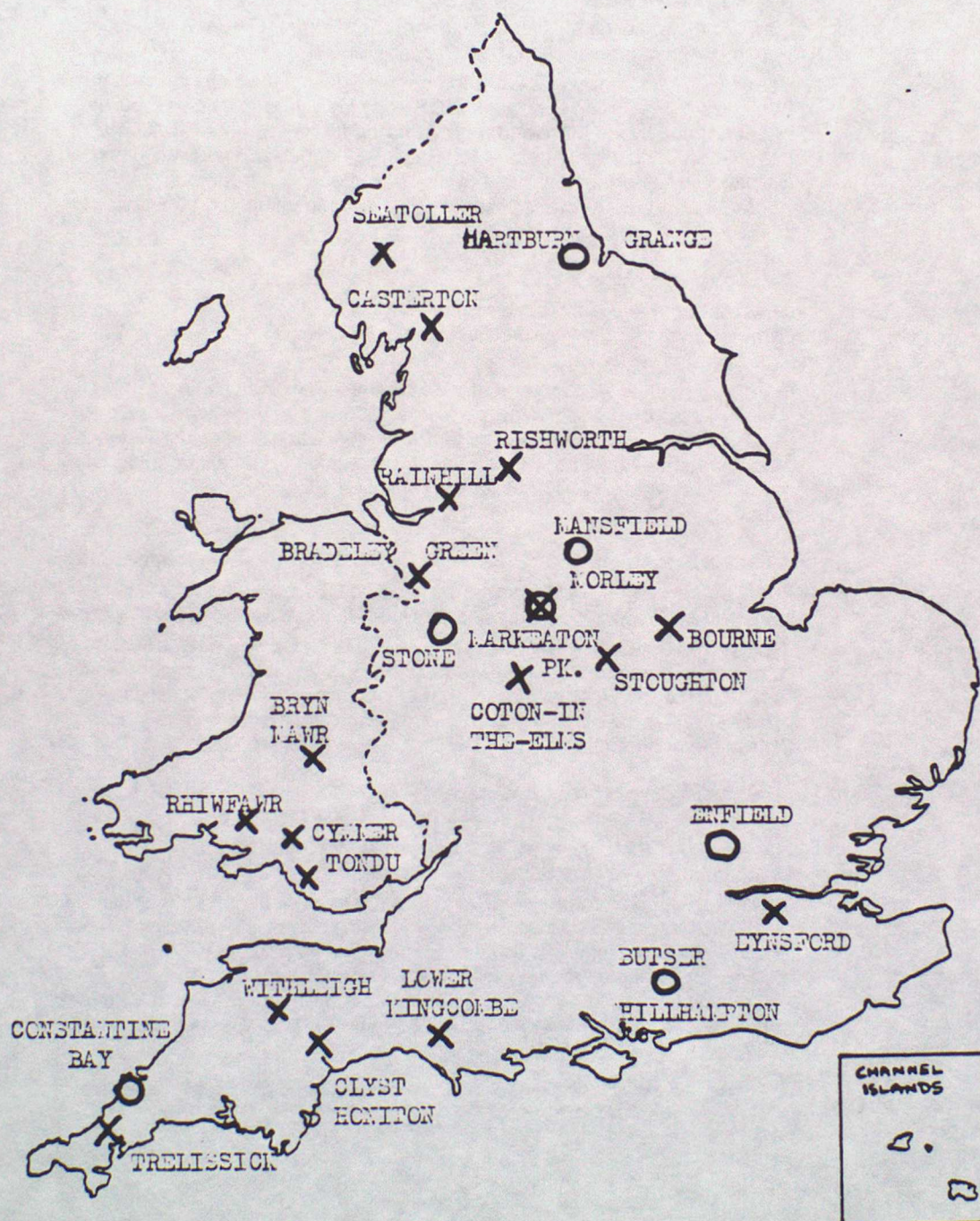
16. MORLEY (Derby.) - Derby College of Agriculture & Horticulture, a replacement for Markeaton Park - observer Mrs P Lunn.

In addition, the following stations should be operational this year.

Bryn Mawr (Powys)	Whipsnade (Beds.)	Frizington (Cumbria)
Coton-in-the-Elms (Derby.)	Bainbridge (N Yorks)	St Dennis (Cornwall)
Broughton-in-Furness (Cumbria)		

Several other potential sites are being investigated.

THE MAP BELOW SHOWS THE STATIONS WHICH HAVE OPENED OR CLOSED
SINCE THE LAST NEWSLETTER WAS ISSUED



X STATIONS OPENED
O STATIONS CLOSED

COURSES IN 1991

£300 approx.

Sailing from Salcombe in Devon, the course takes place aboard the Club's 86ft classic Edwardian schooner "HOSHI", with berths for 9 plus Course Leader, Skipper and Mate and more importantly the full time Cook. The destination will be the waters of the English Channel, and you will learn not only about meteorology afloat, but also about sailing a traditional gaff rigged boat, from measuring weather elements to influencing the ship's course on the basis of your forecast.

£180

A course in which you are immersed in the weather and all things meteorological in beautiful surroundings 1300ft up in the Yorkshire Dales. A full week's programme of talks, outdoor work and films includes learning about weather satellites, a forecasting competition and the launching and tracking of hydrogen-filled balloons. Useful for GCSE teachers and students.

21-28 August residential £195

Sponsored by the Royal Meteorological Society – Do you have a lively curiosity and an interest in the weather? Would you like to find out about what causes the weather? Learn to make your own weather forecasts? Track weather balloons and carry out other outdoor experiments? Then this is the course for you.

£90 approx.

Weekend courses for those who go into the mountains for work or leisure, including leaders of parties and those working towards Mountain Leadership qualifications, Duke of Edinburgh award, and GCSE Meteorology. Includes one field trip and informal lectures. Bookings (including deposit of £30, deducted from course fee of £90) to: National Centre for Mountain Activities, Plas-y-Brenin, Capel Curig, Gwynedd.

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CO-OPERATING OBSERVERS COURSES 1991 - 1992

The Meteorological Office College at Shinfield, where our courses are held, is being refurbished this year. When the decorators have finished, at the end of the year, the bedrooms and communal rooms should be much improved.

Courses for observers, however, have been affected. Below is the programme for the '91-'92 academic year. This is just to give you prior notice, so that you can be prepared when the application letter arrives in May.

COURSE	DATES	PLACES
C01 -----	2nd - 6th DECEMBER 1991 -----	12
C02 -----	11th - 15th MAY 1992 -----	15
C03 -----	22nd - 26th JUNE 1992 -----	15
C04 -----	6th - 10th JULY 1992 -----	15

AWARDS TO OBSERVERS 1991

Firstly, congratulations to **Mr E A Bonser**, the observer at Newtown Linford, for his award of a B. E. M. in the New Year's honours list.

After 25 years of observing three observers have received well deserved gifts, many thanks and congratulations to:-

Mrs J Evans	-	Prestatyn (Clwyd)
Mr A Chester	-	Sutton Bonnington (Leics.)
Mr R J Irving	-	Tregastick (Cornwall)

Congratulations to the following observers who received an award in recognition of the records they have maintained at their stations over the past 15 years.

Mr R Walls	-	Christchurch (Dorset)
Mr & Mrs T H Hazelden	-	Whitechurch (Dyfed)

A new award for 10 years of observing has been initiated, the following 18 observers/stations have qualified this year.

Mr P A Rogers	-	Bournemouth	Mr C Russell	-	Bradford
Mr J Wynne	-	Sellafield	Mr B Varnam	-	Brooksby Hall
Mr D Berry	-	Stanstead Abbots	Mr R Newton	-	Covenham
Mr P H Denton	-	Terrington	Mr A Saunders	-	Hastings
Mr A Moore	-	Terrington	Mr Winter	-	Hastings
Mr D C Smith	-	Towry Castle	Mr B Clist	-	Hemyock
Mr A D MacGregor	-	Twist	Mr & Mrs P Moxey	-	High Beach
Mr B Long	-	Kielder Castle	Mr R M Goodall	-	Warsop
Mr D Barnard	-	Levington	Mr J Holt	-	Worthing

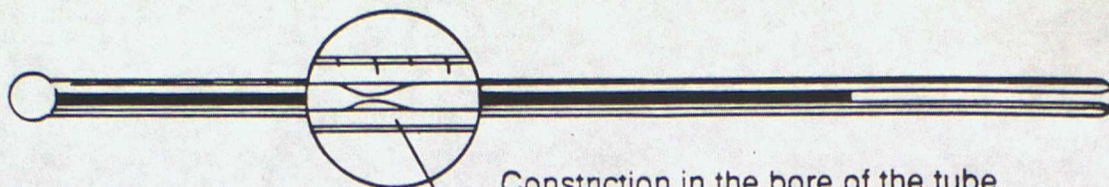
Book awards were made to the 10 observers listed below for the excellent returns they provided during the year.

Mr S E H Martin	-	Ashover (Derbyshire)
Mr M F Wickenden	-	East Malling (Kent)
Mrs S Satterly	-	Exmouth (Devon)
Mr A J Hughes	-	Llanymawddwy (Powys)
Mr K Cook	-	Low Etherley (Co. Durham)
Mr P Hinder	-	Neath (W. Glamorgan)
Mr K Spiers	-	Reading Univ (Berks)
Miss G Boon	-	Sheffield, Weston Park (Yorks.)
Mr J Crum	-	Wellesbourne (Warwicks.)
Mr T Trask	-	Westonbirt (Glos.)

Also mentioned in despatches as providing a high standard of returns were:-

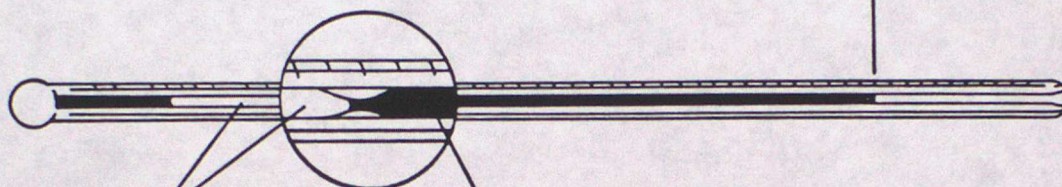
Miss L Haydon	-	Alice Holt Lodge
Mr M Beadle	-	Hazelrigg
Mr E A Bonser	-	Newtown Linford
Mr T C Smith	-	Raunds

HOW THE MAXIMUM THERMOMETER FUNCTIONS



Constriction in the bore of the tube
The mercury forces its way through the constriction as the temperature rises and the mercury expands

The maximum temperature reached is obtained by reading the temperature at the extreme right hand end of the mercury column



As the temperature falls the mercury contracts back into the bulb leaving a gap between it and the constriction

When the temperature falls there is no pressure in the reverse direction to force the mercury back through the constriction accordingly, once the mercury has come through the constriction on a rising temperature, it remains above the constriction until the maximum thermometer is reset

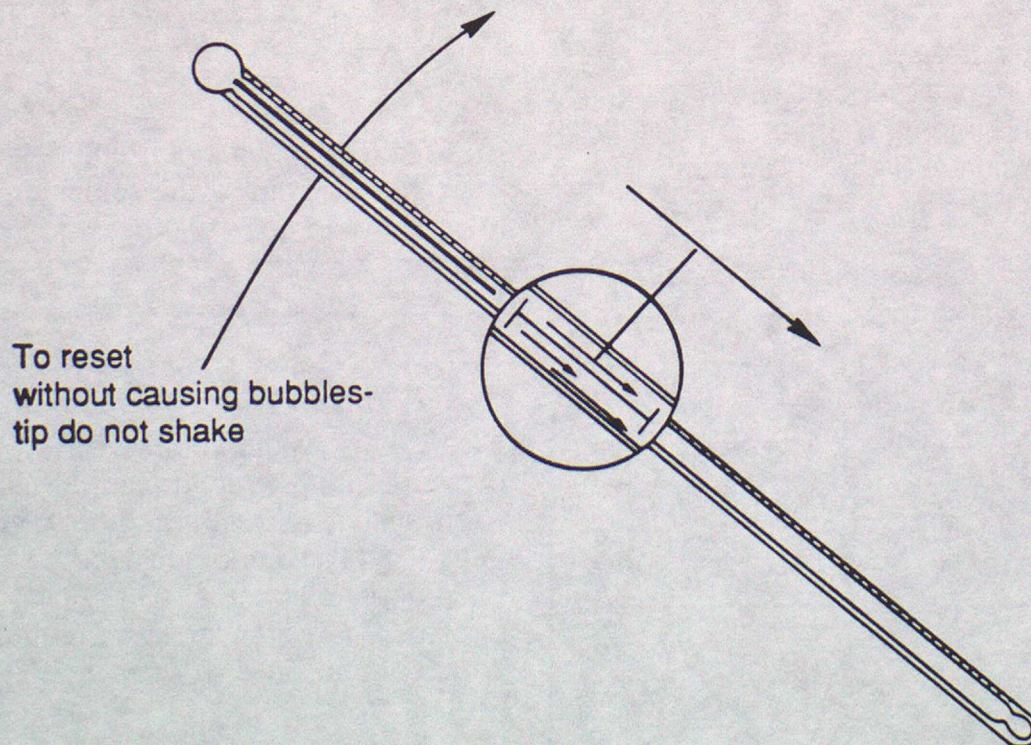
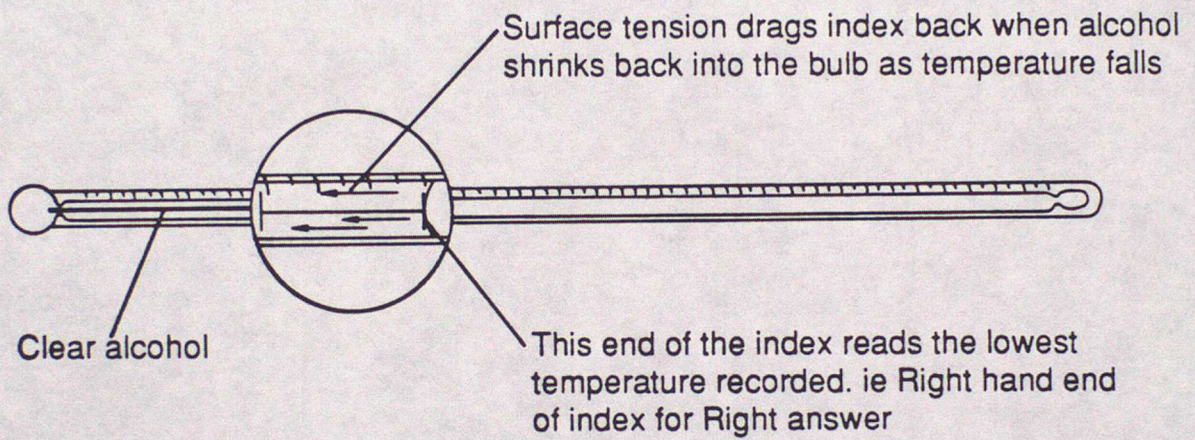
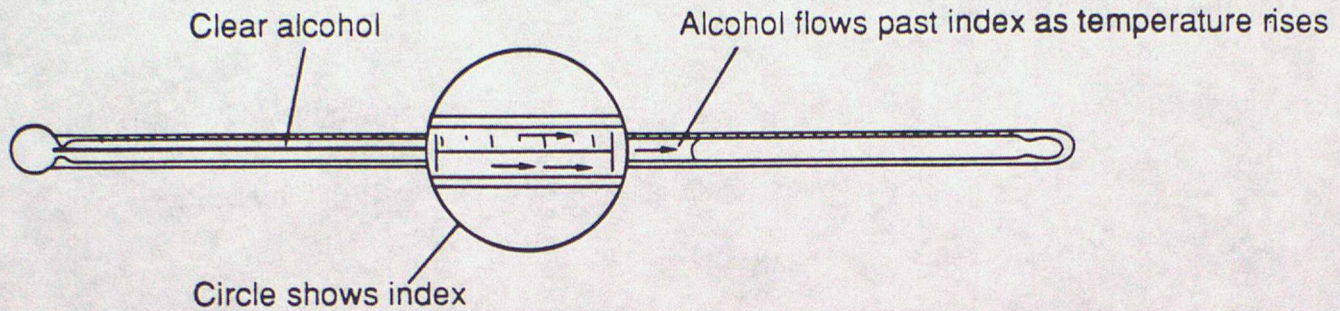
TO RESET MAXIMUM THERMOMETER



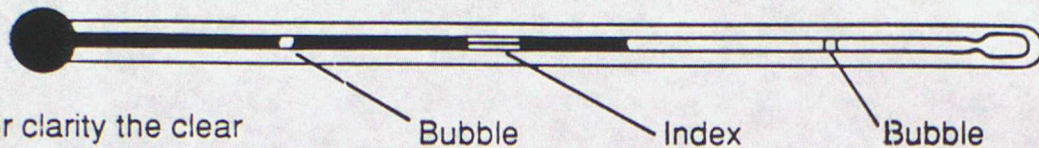
Swing but do not lift arm higher than this

Be careful
stand well
clear of screen
when swinging

HOW THE MINIMUM THERMOMETER FUNCTIONS

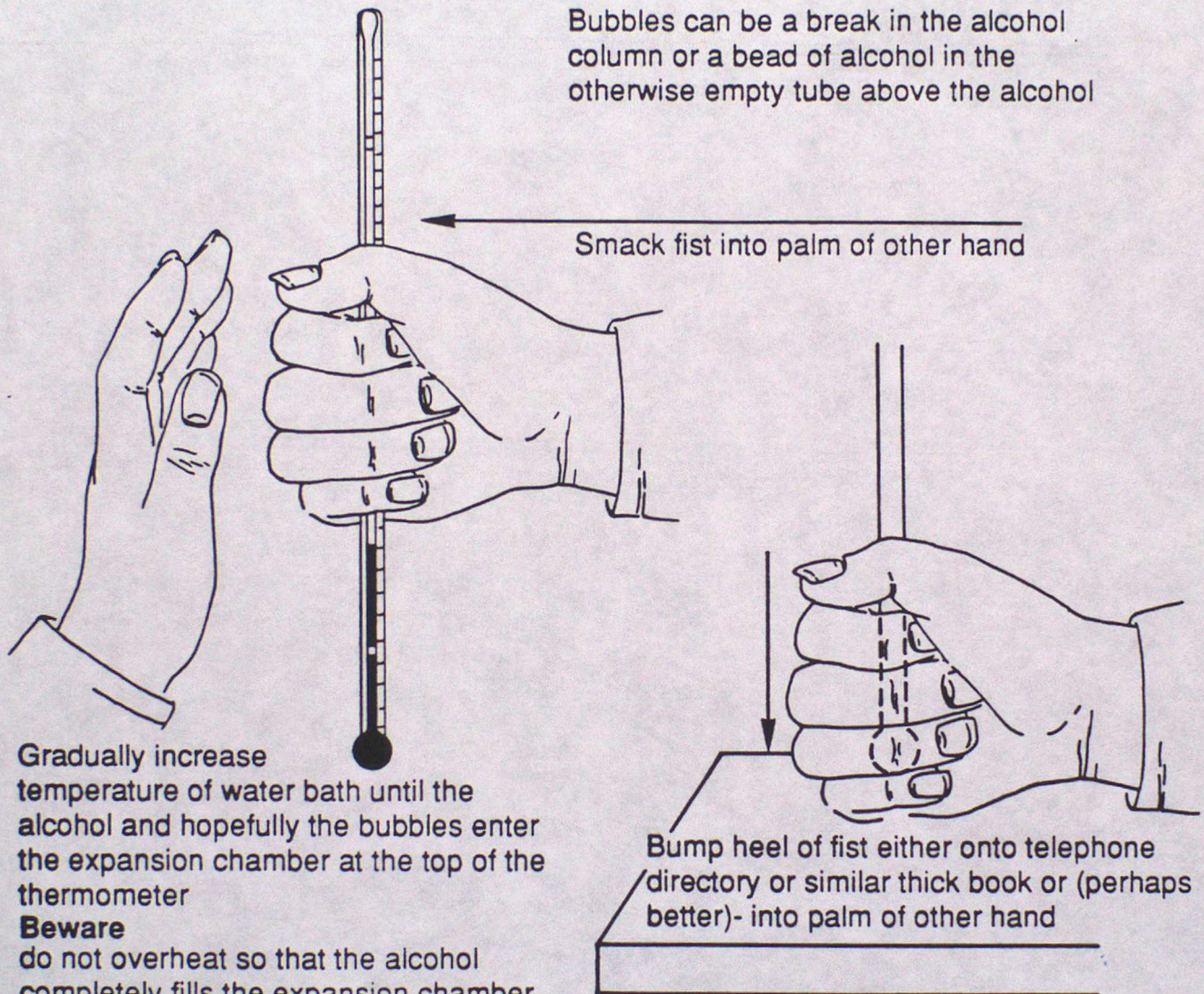


HOW TO REMOVE BUBBLES IN MINIMUM THERMOMETERS



N.B. for clarity the clear alcohol has been shaded in

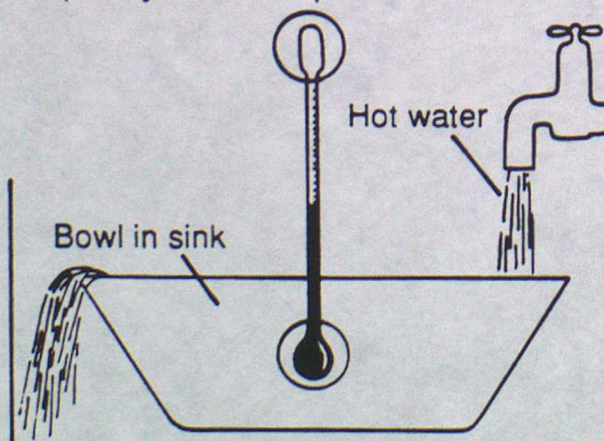
Bubbles can be a break in the alcohol column or a bead of alcohol in the otherwise empty tube above the alcohol



Gradually increase temperature of water bath until the alcohol and hopefully the bubbles enter the expansion chamber at the top of the thermometer

Beware

do not overheat so that the alcohol completely fills the expansion chamber



N.B. after all the bubbles have been cleared, to prevent them returning again always leave the thermometer in a vertical position (bulb end downwards) for at least 24 hours so as to allow draining to take place. After draining, the thermometer can be put back into service

THE QUALITY CONTROL PROCESS

After the arrival of your completed form, hopefully by the end of the first week of the following month, it is handed to the person responsible for your area. He then checks that the headings are correct, the form has the correct DCNN, station name, date etc. The form is then sent to Data Processing Services DPS. Here the figures are entered into the computer via a team of highly skilled women who "key" the figures in at the rate of 11000 key depressions an hour, 23000 key depressions an hour have been achieved!

The form then comes back to room 139 with a computer printout containing the Initial Quality Control run. This checks the data for:

1. **Internal Consistency.** ie if the visibility is less than 1000M is there something in the present weather group to account for it.
2. **Range Check.** ie is the Max temperature within limits for that month.
3. **Sequential.** compares one days values with the day before and the next day.

The next stage is called the **AREAL QUALITY CONTROL**

This is where one station's values are compared to others. This will show up any value significantly at variance with its neighbours.

The computer program divides the country up into 100km square areas. In each square there will be a variety of different types of station, with the Met Office stations being used as the standard. The Met Office stations (hopefully) being the most reliable.

In each square there is ideally a minimum of seven stations and a maximum of sixteen.

The values checked by this method are:

Dry Bulb temperature
Wet Bulb temperature
Maximum temperature
Minimum temperature
Grass Minimum temperature
Sunshine

When the comparisons are being done allowances are made for factors affecting the individual stations. This is done by looking at the long term averages thus giving a "weighting factor" which is applied to the value.

When a value is significantly different from its neighbour's it is highlighted by the computer for consideration by the Q.C team. The member of the Q.C team will then use his general meteorological expertise plus his knowledge of the station to try and resolve the query.

An example of Areal QC for minimum temperatures

FORTROSE 19 AUG 89 TMIN 9-9 db: 8.5 R: -4.2 +/-5? E: 12.7
SD: 4.1

121
139
112 136 103
85#
115
120
106 133
114
106 120

S:100KM

120

The computer has highlighted the value of 8.5 as being too low compared to its neighbours and has suggested a value of 12.7 as being more appropriate. If it is decided that this figure is the more likely one then an amendment letter is sent to the observer concerned for his/her consideration.

N.B If the observer has good reason for wishing to retain the original value then he/she will have the final say. After all it's the observer who's on the spot!

If there are small amounts of data missing then a program called a BACK AREAL is run. This produces microfiche which contains detailed data for surrounding stations and from this estimates can be made for the missing data. Late forms are also dealt with by this program.

This whole process takes about 6 weeks.

Rainfall values are checked by a separate team who deal with nothing but rainfall (they have nearly 3000 gauges to check) and they use a similar method to the AREAL QC. Any changes they make are notified to the Climate QC team and they then inform the station via the amendment letter

On the back of the form is space for a Weather Diary. We would be very grateful if something could be entered here as they do prove very useful. It does not have to be a detailed account of the days weather with every change of sky mentioned, and you do not have to use Beaufort Letters. It is particularly useful where queries about rainfall arise and cross checking the 'Days Of' column on the front of the form. Extensive use is made of the weather diaries particularly by the inquiries section of the Met Office.

Please remember if you have any queries or problems do not hesitate to call us as we will be happy to help.:

NEW RECORDS FOR OLD
AT
WESTON PARK, SHEFFIELD

Sheffield's official weather station is sited on the western edge of the City in Weston Park, 137 metres above sea level. The Station has a long history of weather observations extending back to 1882. It was established by Elijah Howarth, the second curator of the Museum, who through his involvement with forecasting in particular, was known to the local press as 'Elijah the prophet'.

Throughout the period of its operation, a running summary of extreme local weather has been compiled into an archive at the City Museum. Recent weather trends which have given exceptionally mild winters and extended hot, dry summers, have prompted several new entries into this compendium of unusual weather. Some of the most notable features recorded at Weston Park, are worthy of discussion.

1989 was the sunniest year ever recorded in Sheffield since sunshine records began in 1898. A total of 1725 hours, exceeded the previous 1911 record by 183 hours, with new records for both May and August. The sunshine total for July was just 1 1/2 hours short of the sunniest month on record (286.2 hours) which occurred in July 1911. A new record for sunniest day, however, was achieved on 3 July 1989 with 16.1 hours sunshine, just a fraction greater than the earlier 1976 record. Sunshine totals were high throughout the summer of 1990 with the only notable exception of June, which had the lowest June sunshine total since 1964 and less than half the total recorded in June 1989.

Mean temperatures for 1989 were the highest in 40 years. The winter of 1988/89 was the mildest on record since temperature records began in 1882 and a very similar pattern occurred throughout the following 1989/90 winter period. Only half a dozen snow lying days were recorded during each of these winter periods in sharp contrast to the 38 snow lying days recorded during the winter of 1985/86. Similarly, only 5 air frosts were recorded throughout each November-February period in 1988/89, and 1989/90, as compared to the 47 air frosts recorded for the same period in 1985/86. Unusually, no air frosts were recorded at Weston Park in January 1990; an outcome which has been equalled at the station on two other occasions only for the month of January ie. 1938 and 1916. The mild weather continued throughout February and into March, with the mildest February since 1945 and the highest maximum (17.5/63.5) and minimum (10.7/51.3) temperatures for February since records began.

In 1989, mean temperatures were well above average for most of the year, except for April which was rather cold, with late snow fall and several frosts. To the time of writing in early November 1990, with the exception of June and September, temperatures have again been well above average during 1990. There were reports of melting road surfaces,

ruined Derbyshire well dressings and depletion of ice cream stocks as summer temperatures in both years soared on several occasions to amazing heights more typical of those experienced in a Mediterranean climate. On 3 August 1990, temperatures reached 34.3°C/94°F to become the highest recorded in Sheffield since records began. In addition, the highest minimum temperature on record occurred on the 24 August 1990 when temperatures fell no lower than 19.9°C/68°F.

An extended summer period was typical for both years. In 1989 the onset of cooler autumnal weather did not occur until November but during 1990 arrived a little earlier, towards the latter half of September.

Precipitation for both 1989/1990 was well short of total yearly average and its distribution throughout the year was somewhat erratic. April is often the driest month of the year but was actually the second wettest in 1989 with more than twice the total monthly average falling on 21 days of the month. The wettest month was December with almost twice the average amount for the month. January and November, usually the wettest months of the year, were in fact, the driest. January and February 1990 were both very wet but the period between March and July was very dry, drier in fact, than the same period of the previous year. Heavy rainfall returned again in October with almost twice the average October rainfall total and with the 17 October being the wettest October day since 1933 with 44mm total. Even so, the cumulative total was still well short of that expected for the time of year and reservoir stocks still below half full.

Turning finally to an appraisal of wind characteristics throughout this period, there are several notable points. Early spring, between the months of February and April, was the windiest period during 1989 although was by no means exceptional. The wild start to the new decade, however, heralded the windiest January on record in Sheffield since anemograph records began in 1959. Gusts of 66 knots/76mph were recorded on the 25th. Not quite so high as those associated with the famous Sheffield 'hurricane' in February 1962 when gusts reached 84 knots/97 mph but nevertheless, strong enough to cause structural havoc throughout the region. The damage became more widespread following a further battering, although of lesser magnitude, towards the end of February and early March. Thereafter with the onset of a more stable weather pattern throughout the summer months, wind speeds were much lighter, only resuming their earlier intensity with the onset of cooler, wetter, autumnal weather at the mid month stage in September.

There is no time like the present, whilst the environment issue is to the forefront, to emphasize the value of long-term data sets such as those maintained at Weston Park, Sheffield. Only by continued observation of long-term weather statistics will we be able to assess the relevance, if any, of unusual events such as those described above to the general pattern of weather experienced in this country. Inevitably, such events can only have helped fuel growing concern regarding global warming and the 'greenhouse' effect. Until however, these events become a more frequent or usual component of our weather, it would be prudent to regard them simply as extremes within the

historical range of variance.

I, for one, am looking forward to monitoring the frequency with which these extremes occur throughout the current decade of weather observations.

Gaynor Boon
Assistant Keeper Earth Sciences/Meteorology
City Museum
Weston Park
Sheffield S10 2TP
Tel (0742) 768588

We would like to make it clear that the Met. Office does not endorse any commercial Met. products. The inclusion of manufacturers' names in this article is the prerogative of the writer. (Ed.)

Technological developments at Weston Park, Sheffield

Sheffield's Weston Park weather station is operated by the Museums Department of the City Council. In January 1990, the department was approached by a sister department with regard to them receiving more continuous weather data directly from the Weston Park site. They were able to provide financial assistance to enable the installation of an automatic weather station at Weston Park, which would eventually meet the requirements of both departments and function to Meteorological Office recording standards. The equipment was provided by Ventureprise Co-operative Ltd of Coventry. Although the system is now operative, only four of the eight sensors are connected to the system due to difficulties in financing the second installation phase of the project.

The automatic recording unit is remotely linked via a modem to the sister department and is also linked to an Apricot personal computer at the City Museum where we will be able to download data at specified intervals. We are ultimately seeking to computerise the whole of our existing database and are currently looking at the range of software available. The existing weather station continues to be operated manually and it is our intention to operate the two systems simultaneously for at least a 12 month period.

As this is new ground for us, we would welcome advice from other observers who are operating or planning to install an automatic system. We would also like to hear from any observers who are involved with storage and analysis of long term data sets by computer.

Gaynor Boon
Assistant Keeper Earth Sciences/Meteorology
City Museum
Weston Park
Sheffield S10 4TP
Tel (0742) 768588
22 November 1990

MY MOST INTERESTING DAY'S WEATHER

After many years of weather watching I thought it would be an interesting exercise to try and pinpoint my most interesting weather day of all. A more difficult task than I had at first envisaged, in that, so many days could fulfil the criteria, but what was the criteria to be? No doubt if I still had been a resident of SE England, I might have chosen the October 'hurricane' of '87, but I missed that event, besides, dramatic weather did not necessarily mean the most interesting. I finally settled that it would have to be a snowy day, because more than any other medium snow has the ability to transform the everyday world. The days remembered from childhood had to be discounted, although such days did fire my lifelong interest. I discounted the blizzard of 29/30 December, 1962, when I was living in NW London, because the really heavy snow mostly fell in the early hours. Eventually I shortlisted two dates, Friday 8th December, 1967, and Sunday 13th December, 1981. On both these dates I was living in Brighton.

The snowstorm, although certainly dramatic, 11 inches of snow in 7 hours, even down to sea level, with much drifting, bringing the town and environs to a complete standstill, and 300 cases of frostbite were reported in Brighton's Evening Argus. I decided that the storm was perhaps too localised to be of general interest, so I plumped for 13th December, 1981. I suspect that most keen Weather Watchers have some memory of that day.

Saturday 12th December, was by itself memorable, brilliant sunshine, light airs, subzero temps and translucent light which paved the way for the very severe frost to follow, which was headlined on the early evening TV news with reports from many parts, of temps. already below -10C. Additionally, the forecasters were warning of a very deep depression expected to track along the English Channel giving severe blizzard conditions over the southern half of Britain.

Sunday, 13th December, dawned an angry red in Brighton with a rising SSE wind and temperatures close to freezing, ahead of the approaching fearsome 'low'; gone the crystal clear skies of overnight, having given way to encroaching frontal cloud. Already, by lunchtime, reports were coming in from the West Country of blocked roads, whiteout conditions etc., and it was already known that Shawbury, Salop., in the shelter of the Welsh Mountains had set a new record for cold in England. At this stage, it was not known that hurricane force winds had blown down swathes of trees on some exposed hillsides along the North Devon coast. That Autumn I was to see with my own eyes the devastation caused.

All that morning the wind continued rising in Brighton and the sky by the hour became more threatening in appearance, a very interesting scenario for an avid weather watcher! My situation in Brighton, 550 feet above msl, afforded good prospects to the South and West, over the English Channel, and on rare days the Isle of Wight could be seen quite clearly, and this was one of those days. A bad weather indicator indeed. However, there were to be no vanguard snow flurries.

The snow arrived at 1500 hrs precisely, as a squall, with storm force gusts, and the temp. fell immediately to -2C, and for the next 4 hours mayhem ensued. The snow blew horizontally, seemingly in all directions at once. Darkness arrived early, the snow had no chance to settle it just blew about, suspended, blowing in clouds off neighbouring roofs, being swept up from streets and gardens to mingle with falling curtains of suspended snow. At 4pm the telephone rang, it was my Mother ringing from the Cotswolds, not normally excited or perturbed by weather but the drama of the occasion impelled her to comment "worst conditions she had ever seen". Meanwhile outside, it continued to snow and storm, the snow had no chance to settle, blowing about and piling into drifts, there was no level snow! At 1900 hrs it stopped snowing, the temp. rose to 4C, a severe Westerly gale blew up with driving rain and a rapid thaw ensued.

Next morning, on the Monday, there was scarce a vestige of snow remaining, the sun shone, it was as though the previous afternoon and evening had never been. There was much talk that morning from folk going to work, that they had confidently expected an enforced day at home.

Fortunately the offending deep depression took a more Northerly track than originally forecast. Undoubtedly, a more Southerly track depression might well have resulted in an epic blizzard to rival the great south country blizzards of Jan. 1881, Christmas 1927 and, perhaps even more appropriate, the destructive 90 mph blizzard that devastated the West Country in March 1891.

For me, the chief interest of Sunday 13th December 1981, was not so much what actually happened but the atmosphere of foreboding the approaching storm engendered. From the lurid red dawn, to the darkening snow streaked landscape, from previous falls, as the clouds lowered and menaced and the icy wind gathered force all that morning and early afternoon. A truly memorable day's weather.

GERRY SOUTHERN

PRESTEIGNE

How about writing down a description of YOUR most interesting day of weather. - Ed.

WEATHER FEATURES - 1990

We were pleased to receive from a number of stations some interesting statistics on the weather at their stations during 1990.

At PRESTATYN (N Wales) Mrs J Evans said they were the warmest place in Britain for two successive days on July 24 and 25, the readings taken by the deputy observer. On 2 July Prestatyn's highest ever temperature was recorded: 34.3°C.

Mr R Clapp, the observer at SAUNTON SANDS, tells us that on the 4th of January 1990 he recorded a highest temperature of 12°C with the most sunshine at 6.1 hours. On 29th November the highest temperature was 11°C and the most sunshine, 6.9 hours. During the year the station had the top temperature 20 times and the sunniest day 5 times. On 3rd August a temperature of 35.4°C which, according to RAF Chivenor, was the highest temperature recorded in the southwest since records began.

From his home, 10 miles southwest of his station at LYONSHALL, Mr R H Green, takes his own readings and sends this interesting comparison.
"August 3rd 1990 (Fahrenheit thermometers)

Max: 93.5 Min: 51.0

Max: of course thrown back, giving the largest daily difference I have ever seen. In this case actually 12 hours 4am to 4pm. Station 4858 (Lyonshall) which I set up 44 years ago, and from which recordings have been continuous, has never exceeded a 37.5 difference. The screen position here is lower than at Lyonshall which would tend towards greater variation in clear air.

A note from Mr A Hughes, the observer at MACHYNLLETH, dated 9/1/91. We've had a wetter spell than usual recently: 407.1mm during the past 21 days. The night of the 5/6th January was very stormy but dry, and I noticed on the morning of the 6th that our windows were covered with a film of salt carried by the S.W. gale from the sea, 40km away at Aberdovey. Later that day the electricity failed for 9 hours, and the Electricity Board faced difficulties due to higher conductance when rain fell later on the 6th.

Mr M F Wickenden, the observer at EAST MALLING has sent the following information.

RECORDS BROKEN (old records in brackets - records commenced 1915)

<u>Mean temp.</u>	February	8.3°C	(7.9°C 1926)
	August	19.4°C	(19.0°C 1975)
<u>Mean Max.</u>	February	11.4°C	(11.1°C 1945)
	August	25.5°C	(24.8°C 1975)
		This was also the 3rd highest mean max. for any month.	
<u>Mean Min.</u>	February	5.1°C	(4.3°C 1926)
	August	13.2°C	Equalled 1975 (13.0°C 1983)
<u>Rainfall</u>	July	7.7mm	(11.0mm 1983)
<u>Sunshine</u>	April	246.5h	(225.9h 1984 & 1948)

Temperature

Winter 1989/90 (Dec. - Feb.) mean temp. 7.3°C (previous mildest 1974/5 - mean temp. 6.8°C).

Spring 1990 (Mar. - May) mean temp. 10.1°C 3rd mildest (2nd mildest 10.4°C in 1945, mildest 10.6°C in 1943).

Summer 1990 (June - Aug.) mean temp. 17.0°C only the 6th hottest but the max. of 34.6°C on the 3rd of Aug. was a new record (33.2°C in 1975) and was the highest max recorded for any month.

Sunshine

Spring 1990 (March - May) 681.6h (637.7h in 1948).

Total for 1990 was 1970.9h (1935.5h in 1949).

Rainfall

Spring 1990 (March - May) 3rd driest with 48.0mm (2nd driest 45.2mm in 1976 & driest 40.6mm in 1944).

Summer 1990 (June - Aug.) 4th driest with 66.8mm (driest 1921 with 35.5mm). Total for 1990, 533.2mm only 7th driest (driest 1921 with 330.4mm).

This information is from EXMOUTH'S observer, Mrs S Satterly.

RECORDS BROKEN

Dec '89 - May '90 Mean monthly temperature was above normal.

Dec '89 - Rainfall 202.7mm - Wettest December (previous 186.6 '81)

June '90 - Sunshine 129.9 hrs - Dullest since June '87 153.0 hrs.

Jan '90 - Highest maximum temperature 14.1°C (previous 13.9 '68)

Jan '90 - Highest minimum temperature 10.8°C (previous 10.7 '83)

Feb '90 - Highest minimum temperature 10.2°C (previous 10.0 '81)

Mar '90 - Highest minimum temperature 11.3°C (previous 10.4 '83)

Jul '90 - Highest maximum temperature 29.9°C (previous 29.4 '83)

Aug '90 - Highest maximum temperature 30.3°C (previous 29.1 '76)

The first 6 days of May saw some very warm weather, with temperatures in the mid 20's, the highest being 24.5 on the 3rd.

The total sunshine for May, some 279.6 hours, was the second sunniest, only being topped by May '89 with 286.2 hours.

Double the usual amount of rain fell during the period Dec '89 to Feb '90. A total of 498.9mm, the average being 248.0mm.

During the following period, however, Mar '90 to May '90, we received only a third of our average rainfall, 57.9mm rather than the average of 174.0mm.

The observer at LINCOLN, Christine Godfrey, sends some items of note.
1990

Gales last winter caused £179,000 damage to Lincoln Cathedral.

1990 was the driest year since 1964. Comparable figures are as follows: -

1964	- 15.58in
1975	- 18.13in
1976	- 19.85in
1989	- 19.2 in (487.7mm)
1990	- 17.8 in (452.1mm)

Highest recorded temperature - August 3rd 1990 - 34.7°C.

Previous highest was 33.3°C on 12th August 1953 and at RAF Waddington in June 1947 - 34.4°C.

Mrs D Roberts, the observer at HURLEY RESEARCH STATION, sent the following details for 1990.

Records on the present site began in 1955 and averages are calculated for 1955-1989

- JANUARY - wetter and milder than average.
Mean max 9.7°C 2nd highest - 9.8°C in 1975
average max 6.5°C
Rainfall Dec '89 + Jan '90 248.2mm - average 131.1mm
- FEBRUARY - very mild, wet and windy.
Max temperature 16.8°C on 23rd previous highest 16.7 in '61
Rainfall 2nd wettest 100.4mm - wettest 101.6mm in 1977
Rainfall Dec - Feb 348.6mm - average 171.2mm.
- MARCH - sunnier than average, warm and drier than first few months.
Mean max 12.6°C 3rd highest, '57 13.6 and '61 13.5.
Mean min 3.9°C 3rd highest, '57 4.8 and '81 6.0.
Rainfall 11.4mm 3rd lowest, 4.8mm in '61 and 10.2mm in '66.
- APRIL - sunnier and drier than average.
2nd sunniest after 227.6 hrs in '84.
Sun Feb-Apr 460.7 hrs - average 309.6 hrs - 48.8% above average
Max of 22.7°C on 30th was 2nd highest after 22.8 in '87
Rainfall March - April 34.3mm - average 96.1mm
- MAY - Warmer, drier and sunnier than average.
Lowest rainfall on record 2.2mm previous 5.1mm in 1956.
March - May rainfall 24.5% of average.
Sun 269.8 hrs 3rd sunniest after 300.5 hrs 1989 & 244hrs 1956.
- JUNE - Cool and dull but still drier than average.
- JULY - Hot, dry and sunny after the first week.
Rain 10.0mm 19.6% of average (51.0mm).
Rain Mar - July 83.3mm 32.4% of average (257.2mm)
Sun 267.5 hrs 4th sunniest after 1989 271.0, 1976 270.6 & 1959 270.4hrs.
- AUGUST - Very warm, dry and sunny.
Mean temp. 18.8°C highest on record.
35.6°C on 3rd highest ever temp. previous 33.7°C in June 1976.
Mean min. temp. 12.7°C 2nd highest - 12.9 in 1975.
Mean max. temp. 24.9°C highest on record - 24.4 in 1976.
Mean temp. 18.8°C highest on record - 18.5 in 1975.
Sun 237.7hrs 3rd highest after 267.8 in '76 & 253.8 in '89.
Rain Mar - Aug 117.5mm 36.4% Of average (322.5mm).
- SEPTEMBER- Dry and sunny but cool. 7th dry month in succession.
Sun 167.1hrs sunniest since 1964 (206.8hrs).
Rain 36.0mm - average 61.2mm.
The potential soil water deficit reached a record 438.9mm on the 29th - previous highest potential SWD 435.6mm On 27th Aug. 1976.
-

Summary of the weather from November 1989 to October 1990

November 1989

The unsettled weather of the last two weeks of October continued into the first 10 days or so of November, with some further heavy rain, especially in hilly western areas of Wales and England, although coastal areas of north-east England often escaped significant rainfall. There were outbreaks of heavy rain over North Wales on the 1st, north-west England on the 4th, much of England and Wales on the 8th and much of Wales on the 10th. Towards mid month settled weather gradually became established over all areas although bringing with it periods of widespread fog. From the 15th it was mostly dry; most of any rain fell in eastern coastal areas and, until the 22nd, the far south-west of England and Wales. Some thundery outbreaks occurred during the first 5 days, and were often accompanied by hail showers. Further hail showers occurred around the 22nd. Over much of southern England it was the sunniest November on record. The highest monthly sunshine amount was 147 hours at Folkestone, Kent, the highest November total anywhere in the United Kingdom since sunshine records began.

December 1989

The month was mostly settled and dry with fog and frost at times until the 11th. There followed a period of very wet and at times windy weather. On the 13th snow fell as far south as the Midlands and drifting snow blocked roads in north Derbyshire. Strong winds from the south or south-west combined with an exceptionally high tide on the 14th to bring widespread flooding to many places on the south coast. Further snow fell in north Derbyshire on the 14th with up to 13 cm of level snow reported lying in the Buxton area. A mini-tornado on the 14th at Long Stratton, Norfolk damaged more than 100 buildings. On the 16th gales and rain over south-west England caused the worst flooding in years at Plymouth, Devon. On the 17th an anemometer at Falmouth, Cornwall in an exposed coastal position registered a gust of 104 kn while several anemographs in the area recorded gusts of more than 70 kn. On the 21st a tornado struck the villages of West and East Stour in Dorset, uprooting trees and causing structural damage to buildings. A band of heavy rain with hail and thunder crossed southern areas on the 23rd, and further thunderstorms occurred on the 24th and 25th. The month was very dull; Hadlow College, Kent measured a total of only 6.7 hours sunshine after 25 sunless days.

January 1990

The month was generally unsettled with periods of rain, heavy at times, or showers, occasionally wintry in northern areas. Much of England and Wales was dry on the 3rd and 4th. Rain and strong winds affected all areas from time to time from the 9th. The 25th was an extremely windy day with severe gales over England and Wales with gusts to 93 kn at Aberporth, Dyfed and Gwennap Head, Cornwall. A great deal of

structural damage was done and a large number of trees brought down; the area affected was much more widespread than that during the storm of 16 October 1987. On the 27th, precipitation totals well exceeded 20 mm widely in a broad belt from Yorkshire and Lancashire, across the western Midlands and the whole of Wales to Devon and Cornwall; the 27th was the wettest 09-09 day in Wales since 17 October 1987, when the rainfall was, as in this case, preceded two days earlier by exceptional winds in southern parts of Great Britain. During the 29th and the next two days much of the United Kingdom had showers and longer spells of rain. Rainfall was heavy and thundery in the south and west, with extensive flooding in several areas, notably around the River Severn, its waters already swollen from the deluge on the 27th.

February 1990

The month was generally unsettled and at times very wet with only about seven dry days, mainly over England and Wales. Early on the 3rd prolonged heavy rainfall occurred south-east of a line from the Bristol Channel to The Wash, resulting in flooding, and the rain turned to snow in many places before it cleared. Much of England and Wales had heavy rain on the 6th and 7th; many places in south-west England had more than 25 mm of rain, with Torbay having about 50 mm, and hilly areas of southern and western Wales also had about 25 mm; Cilfynydd, Mid Glamorgan accumulated 108 mm of rain over the two days. There was further widespread flooding along the valleys of the Wye, Severn and Thames. On the 19th very heavy rainfall over north-west England and North Wales caused flooding, while central and eastern England stayed mainly dry. The coincidence on the 26th and 27th of strong winds, low atmospheric pressure and 'spring' tides led to severe flooding and wave damage along several British coasts: Towyn, Clwyd suffered a major disaster when sea defences were overwhelmed. Sheltered eastern areas escaped most of the showers on the 27th.

March 1990

England and Wales continued to have a good deal of dry weather, but with short unsettled interludes. Thunderstorms, often accompanied by hail, occurred over north-east England and East Anglia on the 1st, locally in the north-west on the 19th, at Fair Isle, Shetland on the 22nd. On the 25th heavy showers with hail and thunder occurred in south-east England. March was the driest over England and Wales since 1961. Parts of Kent had as little as 2 mm of rain. Charing and Ulcombe, both in Kent, each recorded only 2.2 mm of rain over the whole month. Sheffield (Weston Park), West Yorkshire had the lowest March rainfall total since 1973 and the highest March sunshine total since 1978. Coventry, Warwickshire reported the sunniest March since 1967.

April 1990

After a dry start, the weather became unsettled over England and Wales on about the 12th. From the 18th there was a good deal of dry weather in most areas, although with another brief unsettled interlude around the 25th. The month began warm, with temperatures around 21 °C in the south-east, but changed to a cold regime on the 2nd, By the 3rd

temperatures were only reaching 7 °C generally. Severe frosts on the 4th and 5th damaged many plants that were further advanced than normal for early April. Overnight on the 1st/2nd rain broke out over Wales and north-western England, spreading to other areas on the 2nd. Amounts were very variable, but a thundery outbreak gave 10 mm to 15 mm over much of East Anglia and south-eastern England. On the 18th showers in eastern England died away, but more general rain crossed all areas later in the day or overnight with 10 mm to 20 mm locally in western mountains. On the 26th rain was rather heavy in some hilly western areas. Parts of north-east England had less than 2 mm of rain between the 18th and 30th. The monthly total of 7 mm at Tynemouth, Tyne and Wear was the lowest for April at the station since 1912, when only 3 mm was measured.

May 1990

Temperatures exceeded 26 °C somewhere in Great Britain on each of the first five days, giving the hottest start to May this century, and was followed by much cooler, showery weather, lasting several days, that moved slowly across the United Kingdom from north-west to south-east; a few places escaped the showers. It became dry again in most places after the 15th although there was further unsettled weather in many areas towards the end of the month. Isolated thunderstorms developed over southern England and East Anglia on the 6th. Showery outbreaks affected most northern areas on the 8th, sometimes accompanied by thunder; during the evening thundery showers crossed the Channel to the Kent coast. Thundery outbreaks occurred on the 9th over northern areas and on the 10th over southern England, spreading later into East Anglia and becoming more widespread during the afternoon, with further thunderstorms developing along the south coast. There were reports of isolated thunderstorms on the 14th and 15th and on the 27th a thunderstorm over Humberside was accompanied by hail. Also on the 27th a 20-metre high whirlwind was observed at Towy Castle, Dyfed.

June 1990

Thunderstorms were reported over East Anglia, Kent and the Isle of Wight on the 1st. On the 2nd one or two thunderstorms occurred in the north of England, sometimes accompanied by hail. There were thundery outbreaks in eastern and south-east England on the 7th, although a large part of south-east England and East Anglia still had little or no rain. On the 8th thundery outbreaks occurred over the Midlands and central southern England, but again amounts were slight. On the 9th western areas of England and Wales had a dry day, although there were small amounts of rain, mainly in eastern England. On the 10th thundery outbreaks gave small amounts of rainfall over central southern England. On the 11th there were some scattered showers and, for a time, a wider area of rainfall over western areas, giving 15 mm at Boscombe Down, Wiltshire during a thunderstorm. The 14th and 15th were generally dry. From the 17th to 24th some rain fell on most days over all areas. The 19th was a sunny day nearly everywhere, while the largest falls of rain occurred on the 20th and 21st. On the 22nd there were thundery outbreaks over East Anglia, Kent and the south Midlands, but with very little rainfall. On the 23rd a group of thunderstorms in the unstable westerly

Weather summary November 1989 to October 1990

airstream crossed from Merseyside to East Anglia, but amounts of rainfall were small everywhere, and some places had no rain.

July 1990

The month began with somewhat unsettled weather in the north, but more settled in southern areas. Early on the 5th, all areas were in an unstable north-westerly airstream with strong winds and some rain in most places during the day; amounts were mainly light. The month was generally dry in England and Wales as a whole, many places having no significant rain from the 8th to 26th. Several places had no significant rain from the 7th for the rest of the month, including Odiham and Farnborough, Hampshire, Easthampstead, Berkshire and Charing, Kent. It became generally hot and sunny over England and Wales by the 14th and 26 °C was reached somewhere every day from the 11th to 31st; 31 °C was reached in one or two places in the south on the 15th and up to 33 °C over a large area of central and southern England on the 21st. The 15th was a wet day in many places from the Midlands northwards. On the 16th it again became warm and sunny in most places, lasting in southern areas for the rest of the month, apart from a little light rain or showers in western areas on the 19th. On the 27th it became unsettled with a little rain in most areas over the next two days although remaining warm. The month was remarkable for the infrequency of thunderstorms, although a few occurred on the 15th.

August 1990

Temperatures reached 32 °C in parts of the Home Counties on the 1st, and on the 3rd a temperature of 37.1 °C was measured at Cheltenham, Gloucestershire, the highest temperature recorded at an officially accredited station since records began. On the night of the 3rd/4th a minimum temperature of 24 °C was recorded at Brighton, East Sussex and in central London. It then became cooler with patchy rain from time to time in northern areas, while remaining very warm in parts of East Anglia and south-east England until the 14th, when it became generally cooler and unsettled, with rain at times and a good deal of thundery activity. Thunderstorms occurred over mainly central and eastern areas during the second half of the month. The mean minimum temperature at Valley, Gwynedd was the highest there since records began in 1941 and equalled the highest minimum values measured at nearby Holyhead in 1911 and 1933. Most places had some rain on the 14th: for some places in southern England the rain ended a period of 38 days with no significant rainfall, the last having been recorded on 6 July. Brooms Barn, Suffolk reported the sunniest August at the station for over 40 years.

September 1990

Temperatures remained high for the first three days of the month, reaching 26 °C in some parts of the south-east, but cooler weather spread from the north-west by the 3rd, accompanied by some rain in most places, especially in the west and north, where it was also very windy for a time on the 5th and 6th. A somewhat settled spell between the 7th and 15th was followed by generally cooler and more changeable weather after mid month. On the 18th most places had some rain and during the

Weather summary November 1989 to October 1990

night of the 18th/19th all areas had rain, heavy in places in the north. The weather was unsettled for the rest of the month in most places, with thunder and hail widely reported across England and Wales on the 24th, apart from a brief spell of fine weather on the 27th. On the 28th the temperature fell to -1.4°C at Hurn, Dorset, giving the coldest night there in nearly 50 years of records. On the 30th there was further heavy rain in the south and a few thunderstorms later.

October 1990

October was a warm month over England and Wales, and rainfall amounts were above normal in most areas with more than twice the normal at Worthing, West Sussex. During the first six days periods of rain affected all areas giving variable amounts. On the 6th it was windy in the south with only small amounts of rain. After a brief drier, colder spell on the 8th, with an early frost in many places there was further rain between the 9th and 11th in central and northern areas. On the 12th and 13th a southerly airflow brought warmer air and temperatures rose to 24°C in several parts of England and Wales. It stayed warm and bright for a time but on the 15th there were outbreaks of thunder accompanied by heavy rain. After a sunny day on the 16th it became unsettled for the next three days, with heavy and thundery rain; an observer at Halesworth, Suffolk reporting three separate thunderstorms, giving a total of 63 mm of rain in the 10 hours between 0600 and 1600 GMT. From the 20th to 23rd it was mainly cloudy and dry in an easterly airstream, but from the 24th to the end of the month it became once more unsettled, with heavy rain and thunderstorms along the south coast, giving heavy falls of 56 mm and 54 mm at Portland Bill, Dorset and East Hoathly, East Sussex on the 26th/27th, and further wet weather on the 29th and 30th, with widespread reports of hail and thunder and some snow on hills in the north.

POET'S CORNER

THE RAIN MEASURE IN DROUGHT

CAN THIS BE RAIN? THE MET MAN CRIED
AS ON HIS WINDOW HE ESPIED
LONG SPLASHES OF WATER, SPACED QUITE WIDE
SO, MOVING TO HIS RAINGUAGE OF COPPER
DID SEE, INSIDE THE BOTTLE PROPER
A SILVER BLOB - A WONDROUS SIGHT
WITH LOOK OF GLEE UPON HIS FACE
HE CAREFULLY POURED, INTO THE GLAZE (?????)
THE WONDROUS BLOB, SO PURE, SO BRIGHT
BUT ALAS, HIS COUNTENANCE DID FALL
FOR WHEN HE'D POURED IT, DRIPS AND ALL
NO MATTER FROM WHICH ANGLE VIEWED
NO READING, EVEN THOUGH QUITE CRUDE
COULD, AS RAINFALL BE CONSTRUED
AND SO - THE DROUGHT CONTINUED

R E WALKER

Deputy Observer at Clarborough, Notts.

Any more budding (or fully bloomed) poets out there?

P.S. On a more serious note, I do hope that a trace was reported! (Ed.)

LETTERS PAGE

PRESTATYN

Is it possible to have an article explaining just what occurs when our 3208B's are received at HQ? I know I, for one would enjoy reading what happens! Could we also be told how many recording stations there are in Britain please?

Mrs J Evans

REPLY - As you see, John Holton of Quality Control has kindly written an article about what happens to your 3208B's.

The number of reporting stations in Britain is approx.:-

CLIMATOLOGICAL.....	510
AUXILIARY.....	120
MET. OFFICE.....	90
TOTAL.....	720

Only ONE letter!! Does this mean you are all happy and confident or just too busy to write! You've got a year to ponder and write a letter, so please let us all know what you're thinking and doing. All letters will be read and most if not all put into the newsletter.